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ABSTRACT

Inasmuch as blacks and other ethnic minorities have not been included in normative studies of most neuropsychological tests, the validity of these measures with these populations is questionable. The present study examined the suitability of selected neuropsychological test norms with 100 "normal" (Mean Wechsler Intelligence Scale for Children-Revised, Full Scale I.Q. 99.52), black adolescents who were 12 and 13 years of age at the time of testing. The neuropsychological tests selected for this study included the Benton Visual Retention Test-Revised, the Symbol Digit Modalities Test, and the Purdue Pegboard Test of manual dexterity. Results show that when published norms were used to evaluate the performances of these subjects, an unacceptably high number of misclassification errors sometimes resulted. (Author/BW)

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SUITABILITY OF NEUROPSYCHOLOGICAL TEST NORMS WITH BLACK ADOLESCENTS

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ABSTRACT

While many clinicians and researchers acknowledge the effects of culture and ethnicity on neuropsychological test performances, others ignore these variables in their work. Inasmuch as blacks and other ethnic minorities have not been included in normative studies of most neuropsychological tests, the validity of these measures with these populations is questionable. The present study examined the suitability of selected neuropsychological test norms with "normal" (Mean WISC-R FSIQ 99.52), black adolescents who were 12 and 13 years of age at the time of testing. Results show that when published norms were used to evaluate the performances of these subjects, an unacceptably high number of misclassification errors sometimes resulted.

A careful examination of the neuropsychological literature demonstrated that while many clinicians and researchers have acknowledged the relationship between culture and ethnicity on neuropsychological test performance (e.g., Adams, Boake, & Crain, 1982; Luria, 1973; Parsons & Prigatano, 1978; Vega & Parsons, 1967), many others have ignored these critical variables in their work. Consequently, interpretations of these tests have serious deficits.

Generally, norms for most neuropsychological tests have been derived from white middle-class populations. Consequently, persons who deviate from these normative standards will tend to be misdiagnosed if such factors as education, premorbid status, SES, and ethnic background are not considered in the interpretation of the performance. Inasmuch as blacks and other ethnic minorities have not been included in validation studies of current neuropsychological tests and batteries, the validity of these measures with such populations is questionable. This state-of-the-art in the field of clinical neuropsychology is particularly disturbing, since neuropsychological testing is increasing with rapid frequency in clinical and school settings. Since misclassification judgments impact greatest on members of ethnic minorities, it is incumbent upon clinicians and researchers to identify the limitations and shortcomings of their test batteries and take the steps to correct them. To examine the proposition that published neuropsychological test norms may be inadequate in their present forms with black adolescents, the investigator selected three commonly used neuropsychological instruments and administered them to a sample of 12 and 13 year old adolescents.

Method

The subjects in this study were 100 right handed, black students (50 males and 50 females) aged 12 and 13 at the time of testing. Students selected for the study met the following criteria: (a) each student had earned a WISC-R Full Scale IQ score between 85 - 115±6 (mean 99.52); (b) each student had spent only one year in each grade and had received passing grades in all courses for the school term; (c) and each student had no reported history of CNS trauma. Details of the method and procedures employed in this study are outlined elsewhere (Knuckle, 1983). The neuropsychological tests selected for this study included the Benton Visual Retention Test-Revised (BVRT-R), the Symbol Digit Modalities Test (SDMT) and the Purdue Pegboard Test of manual dexterity. Descriptions of these tests and their administrative procedures may be found elsewhere (Knuckle, 1983).

Results

When guidelines outlined by Benton (1974) were employed to evaluate the performances of these subjects on administration A (immediate visual memory) of the BVRT-R, 40% of the subjects earned scores which are classified as either borderline or defective. In contrast, the number of students in the normative population who performed at a comparable level was appreciably lower (15%). Twenty-one percent of the students in the sample earned scores in the defective range, while 4% of the normative sample performed at this level. In marked contrast to the hight rate of misclassifications that resulted from the use of the BVRT-R (visual memory), in this sample the percentage of students misclassified using the Benton (Administration C, Design Copy) was 10%. Using the Purdue Pegboard normative data developed by three

different groups of researchers (Costa, Vaughan, Levit, & Farber, 1963; Gardner & Broman, 1979; Goldberg & Smith, 1976) an usually large number of subjects in our sample were misclassified (range 52% to 66%). Finally, the most efficient instrument in terms of the number of correct classifications was the SDMT. The SDMT(written and oral) resulted in only 3% and 4% misclassifications respectively. Complete analyses which take sex and age differences into account may be found elsewhere (Knuckle, 1983).

TABLE 1

MISCLASSIFICATION RATES

TEST	Male Ss N=50	Female Ss N=50	Total N-100
BVRT-R (A) Benton (1974			
-2 or below the expected score	48%	32%	40%
-3 or more beloe expected score	28%	14%	21%
BVRT-R (C)			
1 SD Below the mean or lower	8%	12%	10%
PPT 30" Costa et al. (1963)	62%	42%	52%
PPT 60" Goldberg & Smith (1976)			
Interpretation (II)	60%	42%	51%
PPT 30" Gardner & Broman (1979)	62%	70%	66%
SDMT Smith (1982)			
Written	6%	0%	3%
Oral	4%	4%	4%

Conclusions

This study should neither be interpreted as challenging the diagnostic validity of the neuropsychological tests with unacceptably high misclassification rates nor an endorsement of the tests with low misclassification rates as valid measures of selected human brain functions. Instead, it provided data which supports the position that the norms of many neuropsychological tests and batteries may be inappropriate for blacks and possibly other ethnic minorities. The development of appropriate norms for ethnic minorities; however, does not necessarily insure adequate delivery of neuropsychological services to these populations. Moreover, tests which reliably discriminate between brain-injured and non-brain injured groups may grossly exaggerate the status of selected brain functions. Therefore, selection criteria should also be based on the ability of these tests to demonstrate construct, concurrent, prescriptive, and ecological validity for the groups to be tested.

Finally, results from this study should serve as a cautionary note to researchers who attribute the poorer psychological and neuropsychological test performances of ethnic minority groups to impaired brain function presumably related to such conditions as (a) inadequate obstetrical and pediatric care, (b) adverse conditions of environmental stimulation, (c) malnutrition/undernutrition and (d) environmental deterioration (Amante, Van Houten, Grieve, Bader & Margules, 1977). Aside from misinterpreting the empirical evidence, these unsubstantiated claims impugn the integrity of clinical neurpsychology and prove more harmful to those studied.

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